

DIOKI EPS R®



SAFETY DATA SHEET

(According to Regulation (EC) 1907/2006 (REACH) and Regulation (EU) 2020/878)

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1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

1.1. Product Identifier

Product Name : Expandable Polystyrene
Standard Product Types : 10R, 20R, 30R, 40R
Synonyms : EPS Expandable Polystyrene,
Cas No : 9003-53-6 polystyrene

1.2. Relevant Identified Uses of the Substance and Uses Advised Against

Used basically for the manufacture of foamed thermal insulation and packaging, food packaging.

1.3. Details of the Supplier of the Safety Data Sheet

Name : Dioki Petrokimya Sanayi A.Ş.
Address : Adana Yumurtalık Serbest Bölgesi 01920 Ceyhan/ADANA /TÜRKİYE
Phone : +90 322 6342015-17
E-mail : info@dioki.com.tr
Web : www.dioki.com.tr

1.4. Emergency Phone Numbers: +90 322 634 20 15-17 (24 hours)

2. HAZARDS IDENTIFICATION

2.1. Classification of the Substance

Substance is currently not listed in ANNEX VI of EU CLP Regulation No 1272/2008.
EUH018: In use, may form flammable/explosive vapour-air mixture.

2.2. Label Elements

Substance is currently not listed in ANNEX VI of EU CLP Regulation No 1272/2008.

Signal Word

N/A

Pictograms

N/A

Hazard Class& Statement

EUH018: In use, may form flammable/explosive vapour-air mixture.

Precautionary Statements

- P210: Keep away from heat, sparks, open flame, hot surfaces. No smoking.
- P233: Keep container tightly closed.
- P243: Take precautionary measures against static discharge.
- P403+P235: Store in well-ventilated place. Keep cool.

2.3. Other Hazards

Product releases pentane, a flammable hydrocarbon.
May cause irritation to skin and eyes.

3. COMPOSITION / INFORMATION ON INGREDIENTS**3.1. Substances**

Not applicable

3.2. Mixtures

Component	%	CAS No	EC No	REACH No	Hazard Codes
Normal Pentane	< 7.0	109-66-0	203-692-4	01-2119459286-30	Flam. Liq. 2; H225, Asp. Tox. 1 H304, STOT SE 3 H336, Aquatic Chronic 2 H411, EUH066,
2-methylbutane		78-78-4	201-142-8	01-2119475602-38	Flam. Liq. 1 H224, Asp. Tox. 1 H304, STOT SE 3 H336, Aquatic Chronic 2 H411, EUH066,

Additional information: Full text of H- and EUH-statements: see section 16.

Occupational exposure limit values are listed in Section 8, if available.

4. FIRST AID MEASURES**4.1. Description of first aid measures****Skin Contact:** Wash skin with soap and water. If symptoms persist, obtain medical attention.**Eye Contact:** Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. If symptoms persist, consult a doctor.**Inhalation:** Remove to fresh air. Seek medical attention if breathing difficulties occur.**Ingestion:** Unlikely to be hazardous if swallowed. If swallowed; do not induce vomiting. Obtain medical attention immediately if ingested.**4.2. Most Important Symptoms and Effects, both Acute and Delayed**

Inhalation: Headache, dizziness

Eye/Skin Contact: Redness, irritation

Long term/delayed effects

No specific information is available.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

Unlikely to be required but if necessary treat symptomatically.

5. FIRE FIGHTING MEASURES**5.1. Extinguishing Media****Suitable extinguishing media:** Water spray, carbon dioxide, foam and dry powder.**Unsuitable extinguishing media:** Water jet.**5.2. Special Hazards Arising from the Substance**

May release carbon monoxide, carbon dioxide, styrene, aliphatic hydrocarbons and traces of hydrogen bromide on combustion.

5.3. Advice for Firefighters

Firefighters should wear complete protective clothing including self-contained breathing apparatus. Keep personnel removed from and upwind of fire. Keep containers cool by spraying water if exposed to fire. Flammable concentrations of pentane may accumulate on storage in closed containers.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

- Spilling product may be slippery.
- Pentane can form explosive mixture with air.
- The pentane vapor is heavier than air, beware of pits and confined spaces.
- Remove or make safe all sources of ignition. Avoid friction, sparks or other means of ignition.
- Take precautionary measures against static discharges. Use only non-sparking tools.

6.2. Environmental precautions

Prevent entry into drains.

6.3. Methods for cleaning up

Small spillages : Sweep up and shovel into waste drums or plastic bags. Transfer to lidded container for disposal or recovery.

Large spillages : Use vacuum equipment for collecting spilt materials, where practicable. Transfer to a lidded container for disposal or recovery.

6.4. Further information

See also Section 8 & 13.

7. HANDLING AND STORAGE

7.1. Precautions for Safe Handling

- Provide adequate ventilation, including appropriate local extraction.
- Avoid formation of dust. Do not breathe dust.
- Keep away from naked flames and other sources of ignition.
- Extinguish any other fire. Remove or make safe all sources of ignition.
- Avoid friction, sparks or other means of ignition.
- The electrical system should be spark free.
- Do not eat, drink or smoke when using this product.
- Take precautionary measures against static discharges. Ensure adequate earthing.
- Avoid release to environment. In case of disposal, consider local-national regulations.

During process:

- Take precautionary measures against static discharges.
- Avoid the build-up of static electric charge and the formation of an explosive pentane-air mixture by emptying containers completely when processing.
- Do not work with line velocity above 8m/s during normal pumping operations.
- All parts of the plant and equipment should be electrically bonded together and connected to earth.
- Electrical continuity should be checked at regular intervals.
- Antistatic clothing and footwear should be used.

7.2. Conditions for Safe Storage, including any incompatibilities

- Flammable concentrations of pentane may accumulate on storage in closed containers. Before unloading freight containers, keep doors open and ventilate for one hour.
- Keep container tightly closed, in a cool, well ventilated place.
- Keep away from direct sunlight and other sources of heat or ignition.
- Keep away from rain and moist conditions.
- Bulk: Keep under inert gas.
- Open top tanks should be covered with an open rigid grid.
- Take precautionary measures against static discharges. The electrical system should be spark-free.
- Storage rooms should be kept cool and provided with a suitable ventilation system to prevent the release and accumulation of pentane.
- Safety devices should be used to alert any formation of pentane/air explosive mixtures.
- The electrical system should be spark-free.
- Equipment to be installed in places with potential of explosion should conform to the requirements of ATEX Directive 94/9/EC.
- Avoid storing or handling in conjunction with UN Class 1 explosives.
- Suitable containers; steel (drums).

7.3. Specific End Use

Used basically for the manufacture of foamed thermal insulation and packaging.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1. Control Parameters

Occupational Exposure Limits

Substance	LTEL (8 hr TWA, ppm)	LTEL (8 hr TWA mg/m3)	STEL (ppm)	STEL (mg/m3)	Note
Pentane (mixed isomers)	600	1800	-	-	WEL

WEL: Workplace Exposure Limit (UK HSE EH40) (see Section 15)

8.2. Exposure Controls

Engineering controls: Local well-ventilation is recommended.

Individual Protection Measures

Eye/Face Protection: Safety eyewear is recommended (EN 166).

Skin Protection: Wear suitable gloves (EN 374). Breakthrough time of the glove material; refer to the information provided by the gloves' producer. Wear suitable protective clothing. Use an antistatic safety shoes/boots.

Respiratory protection: If there is dust formation/accumulation during transport and/or process, usage of approved dust mask is recommended.

Environmental exposure controls: Relevant local and EC regulations on Volatile Organic Compounds (VOC) for EPS industry should be complied.

Hygiene measures: Do not eat, drink or smoke while using. Wash hands before breaks and at the end of workday. Solvents should never be used as hand cleaner. Work area, equipment and clothing should be cleaned regularly.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Appearance	: Solid
Form/Color	: Small spherical beads/White (mat)
Density	: 1020 - 1050kg/m ³ (beads, at 20 °C)
Bulk density	: circa. 600 kg/m ³ (at 20 °C)
Vapourpressure	: Not applicable
Vapour density (air: 1)	: 2.5 (pentane)
Boiling point	: Not available
Melting point	: Not available
Flash Point	: < -50 °C (pentane)
Upper explosive limit	: %7.8 (v/v) (pentane)
Lower explosive limit	: %1.3 (v/v) (pentane)
Solubility in water	: Insoluble
Solubility (other)	: Soluble in aromatic hydrocarbons, halogenated solvents and ketones.
pH	: Not applicable
Auto ignition temperature	: 285 °C (pentane)
Softening point	: 70-75 °C (beads expand with evolution of pentane)
Explosive properties	: May form flammable/explosive vapor-air mixture during usage.
Oxidising properties	: Not oxidising

9.2. Other Information

N/A

10. STABILITY AND REACTIVITY

10.1. Reactivity

Stable under normal usage and storage conditions.

10.2. Chemical Stability

Stable under normal usage and storage conditions.

10.3. Possibility of Hazardous Reactions

In use, may form flammable/explosive vapour-air mixture.

10.4. Conditions to avoid

Keep away from heat, sources of ignition and direct sunlight.

10.5. Incompatible Materials

Avoid storage and/or handling with UN Class 1 explosives.

10.6. Hazardous decomposition products

Pentane, styrene, carbon monoxide, hydrogen bromide (in case of fire or during hot wire cutting).

11. TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in regulation (EC) No 1272/2008

Assessment is based on available information for similar products.

Exposure to high level of pentane vapors may cause dizziness, headache and anesthetic effects.

Acute Toxicity : The product does not need to be classified. Based on available data, it is assumed that the classification criteria are not met.

Exposure Limits;

Acute toxicity (mouth) : LD50 > 2000 mg/kg

Acute toxicity (skin) : LD50 > 2000 mg/kg

Acute toxicity (inhalation) : LD50 > 5 mg/l

Skin corrosion / irritation : May cause irritation for eye and skin.
Based on available data, the classification criteria are not met.

Serious eye damage / irritation : Based on available data, the classification criteria are not met.

Respiratory or skin sensitization : Based on available data, the classification criteria are not met.

Germ cell mutagenicity : Based on available data, the classification criteria are not met.

Carcinogenicity : Based on available data, the classification criteria are not met.

Reproductive toxicity : Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity (single exposure) : Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity (repeated exposure) : Based on available data, the classification criteria are not met.

Aspiration damage : Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Aquatic Invertebrates

Since the solubility of product is low, the test has been carried out on an eluate (EC50 (48 h) > 100 mg/l, Daphnia magna; OECD Guideline 202, part 1, static).

No toxic effects occur within the range of solubility.

Aquatic Plants

EC50 (72 H) > 100 mg/l (growth rate)

12.2. Persistence and Degradability

Polymer is considered to be non-biodegradable. Pentane is readily biodegradable.

The product is essentially insoluble in water. EPS sinks in fresh water, may float or sink in sea water. It can be largely eliminated from the water by mechanical separation.

12.3. Bioaccumulative potential

Has low potential for bioaccumulation.

12.4. Mobility in soil

No data.

12.5. PBT and vPvB Assessments

No data.

12.6. Other Adverse Effects

Pentane has very low Global Warming Potential (<0.00044) and zero Ozone Depletion Potential.

13. DISPOSAL CONSIDERATIONS

Unused, old and surplus beads may still contain residual pentane. So, the product has to be treated using all the safety measures in place for the fresh material (section 7).

Recover or recycle if possible.

Remove all packaging for recover or disposal.

Normal disposal is carried out by means of incineration by an accredited disposal companies.

Dispose of contents in accordance with local or national regulations.

14. TRANSPORT INFORMATION

14.1. Roadway and Railway Transport (ADR/RID)

14.1.1. UN Number : UN 2211

14.1.2. UN Proper Transport Name : POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour

14.1.3. Class : 9 (Miscellaneous dangerous substances and articles)

14.1.4. Packing Group : III

ADR/RID Risk No (Kemler code) : 90

Tunnel Abbreviation Code : D/E

14.1.5. Environmental Hazard : None

14.1.6. Special Precautions for user : Keep away from any source of ignition.

Transport or conveyance within the manufacturing site; Refer to the internal procedures and information provided by this document.

Transport or conveyance outside the manufacturing site; apply the requirements of the regulations on transport of dangerous goods and the manufacturer's recommendation on safe loading, transporting, unloading of the material.

14.1.7. Maritime Transport in bulk according to IMO instruments : Not applicable.

14.2. Seaway Transport (IMO/IMDG)

14.2.1. UN Number : UN 2211

14.2.2. UN Proper Shipping Name : POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour

14.2.3. Class : 9 (Miscellaneous dangerous substances and articles)

14.2.4. Packing Group : III

EMS No : F-A, S-I

14.2.5. Environmental Hazard : None

14.3. Airway Transport (ICAO/IATA)

14.3.1. UN Number : UN 2211

14.3.2. UN Proper Shipping Name : POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour

14.3.3. Class : 9 (Miscellaneous dangerous substances and articles)

- 14.3.4. Packing Group** : III
14.3.5. Environmental Hazard : None

14.4. Special Precautions

Keep away from any source of ignition.

Transport or conveyance within the manufacturing site; Refer to the internal procedures and information provided by this document.

Transport or conveyance outside the manufacturing site; apply the requirements of the regulations on transport of dangerous goods and the manufacturer's recommendation on safe loading, transporting, unloading of the material.

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- CLP (EC) No 1272/2008 : Classification system
- (EU) 2020/878 (Revised Requirements for EU Safety Data Sheets)
- REACH (EC) No 1907/2006
 - REACH Annex XIV : None
 - REACH Annex XVII : None
- RoHS 2002/95/EC : None
- ODS (ozone-depleting substances) 1005/2009/EC : None
- Waste Framework Directive 2008/98/EC : Waste Treatment System
- (EC) No 1935/2004 : In compliance with the regulation

15.2. Chemical safety assessment

Chemical safety assessment has been carried out for those components of the mixture for which it was required.

16. OTHER INFORMATION

16.1. Revised sections

First edit

16.2. List of relevant R phrases, hazard statements, safety phrases and/or precautionary statements given under Sections 2 to 15 and (if applicable) full text of any statements which are not written out in full under the aforementioned Sections

H224	Highly flammable liquid and vapour
H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways
H336	May cause drowsiness or dizziness
H411	Toxic to aquatic life with long lasting effects
EUH066	Repeated exposure may cause skin dryness or cracking.
vPvB	Very persistent and very bioaccumulative (substance)
PBT	Persistent, bioaccumulative and toxic (substance)
LC50	Lethal Dose 50%, dose required to kill half the members of a tested population after a specified test duration
EC50	Concentration of a tested substance causing 50% changes in response during a specified time interval.
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Code for Dangerous Goods

Disclaimer

Refer to the appropriate Dioki's bulletins for specific processing guidance and good manufacturing practices (purging, processing parameters, shutdown, etc.).

The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist.

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